

Project scope: The cost-effectiveness of the Scottish Hip Fracture Audit

14/10/2022

Research question

What is the cost-effectiveness of compliance with the standards included in the Scottish Hip Fracture Audit?

Inclusion criteria

The project will be based on the following criteria:

Population	Hip fracture patients
Intervention	Compliance with Scottish Hip Fracture Audit Standards
Comparator	Reduced/non-compliance with Scottish Hip Fracture Audit Standards
Outcomes	Costs and outcomes of relevance i.e. Survival, readmissions, length of stay (CCA possibly reducing to a CEA or even a CUA (if literature searching permits) if LoS and readmissions are included on the cost side).
Limits	Regression analysis of correlations in compliance. NHS/PSS perspective for base case analysis.

Planned activities

SHTG conducted a topic exploration on the available data in the public domain for the Scottish Hip Fracture Audit (SHFA) and requested access to individual patient level data in order to assess the audit's cost-effectiveness. The SHFA team therefore provided access to the relevant data in order that SHTG can carry out this assessment.

Data variables provided include compliance (Yes/No) with each of the standards (1-8, 9.1 and 9.2, 10-12) and the following patient outcomes:

- Length of stay (acute)
- Length of stay (total)
- Readmission at 14 days
- Survival at 30 days
- Survival at 60 days

The following additional variables were also included to account for any differences in compliance according to age, sex, hospital site, audit year and seasonality (month).

Access to this individual patient level data required an information request to PHS and so the planned analysis has already been documented elsewhere (Information Request Form available on request from SHTG). We shall conduct a regression analysis comparing the presence/absence of an standard and/or combinations of the standards for hip fracture audit as the independent variables in a model against each of the dependent variables (length of acute/total stay, readmission at 14 days and survival at 30 and 60 days).

This will provide us with equations that describe the average relationship between the aforementioned patient outcomes of care (survival, length of stay, readmission) and each possible combination of compliance with the Scottish Hip Fracture audit standards, as well as the relevant additional variables (e.g. patient age, patient sex, hospital site, audit year).

This will allow us to model the cost-effectiveness of the Scottish Hip Fracture Audit, given the cost of running the audit against the value of having the audit in place in terms of additional compliance with the standards, and the subsequent patient benefits that accrue from the audit being in place in terms of patient outcomes.

Our initial analysis will take the form of a cost-consequence analysis, whereby we keep each audit outcome disaggregated and look separately at the effect of the audit on each of them (Stage 1). However, as both the length of stay and readmission variables can be substituted with average unit costs of a patient stay in hospital, we expect it to be possible to then combine the model into a single cost-effectiveness assessment of the cost per additional surviving patient at 60 days (Stage 2). These analyses (Stage 1 and Stage 2) will form the basis of the report.

We note we should expect some degree of uncertainty in terms of the extent of possible confounding as some variables relating to discharge may be affected by systemic factors unrelated

to the medical fitness for discharge (e.g. capacity in HSCP services to provide care at home for a patient needing support upon discharge).

In addition, hospital site and year (and month) are explanatory variables. Data include the timeframe to Dec 2021 and therefore COVID is an important consideration. Should any site-based, or year-based differences in compliance with the standards be identified from the regressions, we will first seek to characterise from routine (e.g. workforce statistics, vacancies, size of elderly population) data on e.g. comparative staffing arrangements for orthopaedic teams that might help explain differences, but we may require further information from either the SHFA team, or hospital sites themselves. This will only be explicitly sought where there is a consistent anomaly in the data and it should be noted that this is not anticipated at the outset for site.

End products

At the end of the project, SHTG will publish:

- SHTG Assessment
- Peer review, Quality Assessment

Timescales (approximate)

Draft for peer review/QA by mid-November 2022. Publication date TBC.